

# Depression Can Break Your Heart

Research over the past two decades has shown that depression and heart disease are common companions and, what is worse, each can lead to the other. It appears now that depression is an important risk factor for heart disease along with high blood cholesterol and high blood pressure. A study conducted in Baltimore, MD found that of 1,551 people who were free of heart disease, those who had a history of depression were 4 times more likely than those who did not to suffer a heart attack in the next 14 years.<sup>1</sup> In

addition, researchers in Montreal, Canada found that heart patients who were depressed were 4 times as likely to die in the next 6 months as those who were not depressed.<sup>2</sup>

Depression may make it harder to take the medications needed and to carry out the treatment for heart disease.<sup>3</sup> Depression also may result in chronically elevated levels of stress hormones, such as cortisol and adrenaline, and the activation of the sympathetic nervous system (part of the

“fight or flight” response), which can have deleterious effects on the heart.<sup>4</sup>

The first studies of heart disease and depression found that people with heart disease were more likely to suffer from depression than otherwise healthy people.<sup>4</sup> While about 1 in 20 American adults experience major depression in a given year, the number goes to about 1 in 3 for people who have survived a heart attack.<sup>5,6</sup>

Furthermore, other researchers have found that most heart patients with depression do not receive appropriate treatment. Cardiologists and primary care physicians tend to miss the diagnosis of depression;<sup>4</sup> and even when they do recognize it, they often do not treat it adequately.<sup>7</sup>

The public health impact of depression and heart disease, both separately and together, is enormous. Depression is the estimated leading cause of disability worldwide,<sup>8</sup> and heart disease is by far the leading cause of death in the United States.<sup>9</sup> Approximately 1 in 3 Americans will die of some form of heart disease.

Studies indicate that depression can appear after heart disease and/or heart disease surgery. In one investigation,



nearly half of the patients studied one week after cardiopulmonary bypass surgery experienced serious cognitive problems, which may contribute to clinical depression in some individuals.<sup>10</sup>

There are also multiple studies indicating that heart disease can follow depression.<sup>4</sup> Psychological distress may cause rapid heartbeat, high blood pressure, and faster blood clotting. It can also lead to elevated insulin and cholesterol levels. These risk factors, with obesity, form a constellation of symptoms and often serve as a predictor of and a response to heart disease. People with depression may feel slowed down and still have high levels of stress hormones. This can increase the work of the heart. As high levels of stress hormones are signaling a “fight or flight” reaction, the body’s metabolism is diverted away from the type of tissue repair needed in heart disease.

Regardless of cause, the combination of depression and heart disease is associated with increased sickness and death, making effective treatment of depression imperative. Pharmacological and cognitive-behavioral therapy treatments for depression are relatively well developed and play an important role in reducing the adverse impact of depression.<sup>4</sup> With the advent of the selective serotonin reuptake inhibitors to treat depression, more medically ill patients can be treated without the complicating cardiovascular side effects of the previous drugs available. Ongoing research is investigating whether these treatments also reduce the associated risk of a second heart attack. Furthermore, preventive interventions based on cognitive-behavior theories of depression also merit attention as approaches for

avoiding adverse outcomes associated with both disorders. These interventions may help promote adherence and behavior change that may increase the impact of available pharmacological and behavioral approaches to both diseases.

Exercise is another potential pathway to reducing both depression and risk of heart disease. A recent study found that participation in an exercise training program was comparable to treatment with an antidepressant medication (a selective serotonin reuptake inhibitor) for improving depressive symptoms in older adults diagnosed with major depression.<sup>11</sup> Exercise, of course, is a major protective factor against heart disease as well.<sup>12</sup>

The NIMH and the National Heart, Lung and Blood Institute are invested in uncovering the complicated relationship between depression and heart disease. They support research on the basic mechanisms and processes linking co-occurring mental and medical disorders to identify potent, modifiable risk factors and protective processes amenable to medical and behavioral interventions that will reduce the adverse outcomes associated with both types of disorders.

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## References

- <sup>1</sup>Pratt LA, Ford DE, Crum RM, et al. Depression, psychotropic medication, and risk of myocardial infarction. Prospective data from the Baltimore ECA follow-up. *Circulation*, 1996; 94(12): 3123-9.
- <sup>2</sup>Frasure-Smith N, Lesperance F, Talajic M. Depression and 18-month prognosis after myocardial infarction. *Circulation*, 1995; 91(4): 999-1005.
- <sup>3</sup>Ziegelstein RC, Fauerbach JA, Stevens SS, et al. Patients with depression are less likely to follow recommendations to reduce cardiac risk during recovery from a myocardial infarction. *Archives of Internal Medicine*, 2000; 160(12): 1818-23.
- <sup>4</sup>Nemeroff CB, Musselman DL, Evans DL. Depression and cardiac disease. *Depression and Anxiety*, 1998; 8(Suppl 1): 71-9.
- <sup>5</sup>Regier DA, Narrow WE, Rae DS, et al. The de facto mental and addictive disorders service system. Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry*, 1993; 50(2): 85-94.

<sup>6</sup> Lesperance F, Frasure-Smith N, Talajic M. Major depression before and after myocardial infarction: its nature and consequences. *Psychosomatic Medicine*, 1996; 58(2): 99-110.

<sup>7</sup> Hirschfeld RM, Keller MB, Panico S, et al. The National Depressive and Manic-Depressive Association consensus statement on the undertreatment of depression. *Journal of the American Medical Association*, 1997; 277(4): 333-40.

<sup>8</sup> Murray CJL, Lopez AD, eds. *Summary: The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Cambridge, MA: Published by the Harvard School of Public Health on behalf of the World Health Organization and the World Bank, Harvard University Press, 1996.  
<http://www.who.int/msa/mnh/ems/dalys/intro.htm>

<sup>9</sup> Murphy SL. Deaths: final data for 1998. *National Vital Statistics Report*, 48(11). DHHS Publication No. 2000-1120. Hyattsville, MD: National Center for Health Statistics, 2000.  
[http://www.cdc.gov/nchs/data/nvs48\\_11.pdf](http://www.cdc.gov/nchs/data/nvs48_11.pdf)

<sup>10</sup> Chabot RJ, Gugino LD, Aglio LS, et al. QEEG and neuropsychological profiles of patients after undergoing cardiopulmonary bypass surgical procedures. *Clinical Electroencephalography*, 1997; 28(2): 98-105.

<sup>11</sup> Blumenthal JA, Babyak MA, Moore KA, et al. Effects of exercise training on older patients with major depression. *Archives of Internal Medicine*, 1999; 159(19): 2349-56.

<sup>12</sup> Fletcher GF, Balady G, Blair SN, et al. Statement on exercise: benefits and recommendations for physical activity programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation*, 1996; 94(4): 857-62.



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